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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,414	05/25/2007	Richard Bisley	594-25608-PCT-US	8548

28116 7590 01/21/2010  
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EXAMINER
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HUGHES, SCOTT A

ART UNIT	PAPER NUMBER
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3663

NOTIFICATION DATE	DELIVERY MODE
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01/21/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	Application No. 10/599,414	Applicant(s) BISLEY ET AL.	
	Examiner SCOTT A. HUGHES	Art Unit 3663	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/9/2007</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-20 are directed to method for predicting surface multiples, and involve steps of selecting traces, computing desired traces, determining pairs of traces, convolving the traces, and stacking the convolutions. These steps are all related to processing of the seismic data, and are all simply processing steps performed on the data. The process claims are not tied to a particular machine or apparatus, and do not result in the transformation of a particular article into a different state or thing as the seismic data is simply processed to create convolutions of the traces in the data. This convolution does not result in a transformation of the seismic data into a different state or thing, as the result of the claimed process is still seismic data.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 11-13 and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Pann (4887243).

With regard to claim 1, Pann discloses a method for predicting a plurality of surface multiples for a plurality of target traces in a record of seismic data (abstract). Pann discloses creating a file containing information regarding a plurality of pairs of recorded traces (abstract; Column 4, Line 29 to Column 5, Line 66; Column 10, Lines 21-45) (Fig. 5), wherein each pair of recorded traces is substantially closest to a desired shot-side trace and a desired receiver-side trace (Column 4, Line 29 to Column 5, Line 66). Pann discloses convolving the pairs of recorded traces to generate a plurality of convolutions (Column 6, Line 56 to Column 9, Line 38). Pann discloses stacking the convolutions for each trace (Column 6, Line 56 to Column 9, Line 38).

With regard to claim 11, Pann discloses subfiles (files for the different traces) (abstract; Column 4, Line 29 to Column 5, Line 66; Column 10, Lines 21-45).

With regard to claim 12, Pann discloses dividing the files according the subsurface lines (abstract; Column 4, Line 29 to Column 5, Line 66; Column 10, Lines 21-45).

With regard to claim 13, Pann discloses extracting a plurality of recorded traces that correspond to the information regarding pairs of traces (abstract; Column 4, Line 29 to Column 5, Line 66; Column 10, Lines 21-45).

With regard to claim 16, Pann discloses sorting the convolutions according to the target traces (Column 6, Line 56 to Column 9, Line 38).

With regard to claim 17, Pann discloses a method for prediction a plurality of surface multiples for a plurality of target traces in a record of seismic data (abstract)), comprising:

selecting a target trace (abstract; Column 4, Line 29 to Column 5, Line 66;  
Column 6, Lines 3-54);

selecting a potential downward reflection point for the selected target trace (Figs .2, 2A) (abstract; Column 4, Line 29 to Column 5, Line 66);

computing at least one of a desired shot-side midpoint, offset and azimuth, and at least one of a desired receiver side midpoint, offset, and azimuth using the selected potential downward reflection point and the selected target trace, wherein the desired shot-side midpoint, offset and azimuth define a desired shot-side trace and the desired receiver-side midpoint, offset, and azimuth define a desired receiver-side trace (Column 4, Line 29 to Column 5, Line 66);

determining a pair of recorded traces substantially closest to the desired short-side trace and to the desired receiver-side trace (Column 4, Line 29 to Column 5, Line 66); and

convolving the pair of recorded traces to generate a convolution (Column 6, Line 56 to Column 9, Line 38).

With regard to claim 18, Pann discloses creating a file containing information regarding the pair of recorded traces abstract; Column 4, Line 29 to Column 5, Line 66; Column 10, Lines 21-45) (Fig. 5).

With regard to claim 19, Pann discloses repeating the steps for all potential downward reflection points (Column 5, Line 2 to Column 6, Line 65).

With regard to claim 20, Pann discloses stacking a plurality of convolutions for each target trace (Column 6, Line 56 to Column 9, Line 38).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pann as applied to claims 1-13 and 16-20 above, and further in view of Gasparotto (6094620).

With regard to claims 14 and 15, Pann does not disclose correcting offsets of the extracted traces by applying differential moveout. Gasparotto teaches methods for identifying and removing multiples from seismic data reflections (abstract). Gasparotto teaches that it is known to correct offsets in traces by applying differential moveout (Fig. 1) (Column 2, Line 50 to Column 3, Line 2; Column 4, Lines 25-67). It would have been obvious to modify Pann to include correcting offset using differential moveout as taught by Gasparotto in order to regularize the data before processing.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT A. HUGHES whose telephone number is (571) 272-6983. The examiner can normally be reached on M-F 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott A. Hughes/  
Primary Examiner, Art Unit 3663